

bottle stopper to force the sealing ring 30 to radially expand into sealing engagement with the neck 1 of the bottle.

Indeed, the bottle stopper is provided with a pair of sealing rings 30, 31 spaced 5 apart in axial sequence by a spacer ring 32. Each of the sealing rings 30, 31 comprises a ring of a synthetic sealing material such as neoprene sandwiched between a pair of washers and are held coaxially on the bottle stopper by a tubular shaft 33 which extends through the bore of each of the sealing rings 30, 31 and spacer 32 and up through the bore of the sleeve/outer plunger 29 and which 10 threadedly engages with the upper sub-component 25a of the platform component 25. Accordingly, the shaft 33 is immovable relative to the platform component 25b. The lowermost end of the shaft 33 has a head 34 shaped like a wing nut to facilitate manipulation for screw threaded engagement or disengagement of the shaft 33 to facilitate maintenance of the sealing rings 30, 31, if desired. Such maintenance may 15 include cleaning of the device.

An upper surface 34a of the head 34 of the shaft 33 serves as a support shoulder for supporting the lowermost sealing ring 31 such that when the bottle stopper is mounted in the neck of the bottle 1 as shown in Figure 11 and then pushed from its 20 initial Figure 11 position to its operative Figure 12 position the outer plunger/sleeve 29 on the upper part 3' of the stopper moves downwardly through the platform component 25 pressing down on the uppermost surface of the upper sealing ring 30 and compressing the sealing ring 30 and lower sealing ring 31 downwardly against the upper support surface 34a of the head 34 of the shaft 33 that is rigidly 25 configured relative to the platform component 25. Thus the sealing rings 30, 31 are forced to bulge radially outwardly into sealing engagement with the neck 1 of the bottle.

Simultaneously, the downward movement of the tubular inner plunger 21 within the 30 tubular shaft 33 as the upper part 3' is moved downwardly causes the head 21a of the inner plunger 21 to emerge from sealing engagement within the bore of the shaft 33 and which thereby opens up the entry port 40 in the head 21a of the inner plunger 21. This thereby opens up a passageway from the neck 1 of the bottle into the bore of the tubular inner plunger 21 and upwardly through the bottle stopper into 35 the chamber 4 of the cap 10 of the bottle stopper whereby the oxygen scavenging medium 17 is directly communicated with the atmosphere in the neck 1 of the bottle.

to scavenge any oxygen present therein. Furthermore as the air reaches the upper chamber 5 the oxygen level indicating tablet 6 will be responsive to the change in oxygen level in the bottle effected by the oxygen scavenging medium 17.

- 5 Thus it will be seen that the pushing down on the upper part 3' of the bottle stopper when the bottle stopper is mounted in place in the neck 1 of the bottle performs two functions. It not only deploys the sealing rings 30, 31 into sealing engagement with the neck 1 of the bottle, but also opens up a passageway through to the oxygen scavenging medium 17 for the medium 17 to start working to remove
- 10 oxygen from within the bottle. The oxygen scavenging medium 17 is, therefore, once installed in the chamber 5 of the cap 10 of the bottle stopper, only exposed to atmosphere when the bottle stopper is in place and, thus, only exposed to the atmosphere within the bottle.
- 15 As with the embodiment of Figure 1, the embodiment of Figure 7 may also be provided with a bottom cap 12' (see Figure 13). Here the bottom cap 12' again serves as a means of mounting the bottle stopper to a wall or other surface using a magnetic wall mount 15 but there is no requirement for the end cap 12' to be configured to seal the passageway of the bottle stopper since the bottle stopper has
- 20 its own integral passageway closure system.

CLAIMS

1. A bottle stopper for a wine bottle or the like, which bottle stopper comprises a body having a sealing member which sits within the neck of the bottle in use and which extends radially outwardly to seal the bottle neck, the stopper further having a passageway extending upwardly therethrough to communicate with the interior of the bottle and which incorporates or communicates with a chamber within the stopper in which is housed an oxygen-scavenging medium, wherein the stopper further has a closure means to close the passageway and which is operable by actuator means that is external to the bottle in use to enable the user to open the passageway when the stopper is in place.
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2. A bottle stopper as claimed in Claim 1, wherein the bottle stopper has a mechanism for compressing the sealing member substantially axially of the stopper to expand the sealing member laterally/substantially radially of the stopper into sealing contact with the neck of the bottle.
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3. A bottle stopper as claimed in Claim 2, wherein the actuator for opening the closure means for the passageway is the same as or coupled to an actuator of the mechanism for compressing the sealing member.
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4. A bottle stopper as claimed in any preceding claim, wherein the oxygen-scavenging means, or oxygen absorber, comprises reduced iron or a polymer containing unsaturated carbon-carbon double bonds.
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5. A bottle stopper as claimed in any preceding claim, wherein the oxygen scavenging means has or is associated with an indicator means to indicate when the oxygen scavenging means has scavenged the oxygen within the bottle.
- 30 6. A bottle stopper as claimed in Claim 5, wherein the indicator comprises an indicator compound which changes colour.
7. A bottle stopper as claimed in Claim 5 or 6, wherein the indicator compound is separate from the oxygen scavenging means and is housed within a chamber in the stopper that has a transparent wall or has a window to enable the change of appearance of the indicator means to be viewed externally.
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8. A bottle stopper as claimed in any preceding claim, wherein the indicator means and/ or the oxygen scavenging means is housed within a chamber that is externally accessible.

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9. A bottle stopper as claimed in Claim 8, wherein the chamber is accessible through removal of a screw-threaded or push/snap-fit cap that encloses and seals the chamber.

10 10. A bottle stopper as claimed in Claim 7, wherein the indicator means is housed in an uppermost chamber having a cap with a window for visibility.

11. A bottle stopper as claimed in Claim 5, wherein the oxygen scavenging means is housed in a chamber below the indicator means and separately accessible
15 by uncoupling an upper part of the bottle stopper body.

12. A bottle stopper substantially as hereinbefore described with reference to any suitable combination of the accompanying drawings.

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13. A bottle stopper for a wine bottle or the like, which bottle stopper comprises a body having a sealing member which sits within the neck of the bottle in use and which extends radially outwardly to seal the bottle neck, the stopper further having a passageway extending upwardly therethrough to communicate with the interior of
25 the bottle and which incorporates or communicates with a chamber within the stopper in which is housed an oxygen-scavenging medium, wherein the oxygen scavenging means has or is associated with an indicator means to indicate when the oxygen scavenging means has scavenged the oxygen within the bottle, the stopper having a transparent wall or a window to enable the change of appearance
30 of the indicator means to be viewed externally by the user.

14. A bottle stopper as claimed in Claim 13, wherein the bottle stopper has a mechanism for compressing the sealing member substantially axially of the stopper to expand the sealing member laterally/substantially radially of the stopper into sealing contact with the neck of the bottle.

15. A bottle stopper as claimed in Claim 13 or 14, wherein the oxygen-scavenging means, or oxygen absorber, comprises reduced iron or a polymer containing unsaturated carbon-carbon double bonds.

5 16. A bottle stopper as claimed in Claim 13, 14 or 15, wherein the indicator comprises an indicator compound which changes colour.

10 17. A bottle stopper as claimed in Claim 13, 14, 15, or 16, wherein the indicator means and/ or the oxygen scavenging means is housed within a chamber that is externally accessible.

18. A bottle stopper as claimed in Claim 17, wherein the chamber is accessible through removal of a screw-threaded or push/snap-fit cap that encloses and seals the chamber.

15 19. A bottle stopper as claimed in Claim 18, wherein the indicator means is housed in an uppermost chamber having a cap with a window for visibility.

20 20. A bottle stopper as claimed in Claim 19, wherein the oxygen scavenging means is housed in a chamber below the indicator means and separately accessible by uncoupling an upper part of the bottle stopper body.

25 21. A bottle stopper for a wine bottle or the like, which bottle stopper comprises a body having a sealing member which sits within the neck of the bottle in use and which extends radially outwardly to seal the bottle neck, the stopper further having a passageway extending upwardly therethrough to communicate with the interior of the bottle and which incorporates or communicates with a chamber within the stopper in which is housed an oxygen-scavenging medium, wherein the oxygen scavenging medium is housed within a chamber that is externally accessible by a portion of the bottle stopper that is readily demountable by the user to enable the user to access and replace the oxygen scavenging medium and reclose the chamber, wherein the chamber is accessible through removal of a screw-threaded or push/snap-fit cap that encloses and seals the chamber.